DOCUMENT RESUME

ED 130 898 SE 021 640

AUTHOR	Best, Terrence
TITLE	A Study for the Birds. [Aids to Individualize the Teaching of Science, Mini-Course Units for Grades 7, 8, and 9.]
INSTITUTION	Frederick County Board of Education, Md.
PUB DATE	73
NOTE	16p.; For related Mini-Course Units, see SE 021 624-656; Not available in hard copy due to marginal legibility of original document
AVAILABLE FROM	Frederick County Board of Education, 115 East Church St., Frederick, MD 21701 (no price quoted)
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	*Biology; Individualized Instruction; Instructional Materials; Junior High School Students; Process Education; *Science Education; Science Materials; Secondary Education; *Secondary School Science; *Zoology
IDENTIFIERS	Maryland (Frederick County); Minicourses; *Ornithology

ABSTRACT

This booklet, one of a series developed by the Frederick County Board of Education, Frederick, Maryland, provides an instruction module for an individualized or flexible approach to 7th, 8th, and 9th grade science teaching. Subjects and activities in this series of booklets are designed to supplement a basic curriculum or to form a total curriculum, and relate to practical process oriented science instruction rather than theory or module building. Included in each booklet is a student section with an introduction, performance objectives, and science activities which can be performed individually or as a class, and a teacher section containing notes on the science activities, resource lists, and references. This booklet presents a study of birds. The estimated time for completing the activities in this module is 2-4 weeks. (SL)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

AIDS TO INDIVIDUALIZE THE TEACHING OF SCIENCE

ED130898

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY

Marvin G. Spencer

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER

MINI-COURSE UNITS

BOARD OF EDUCATION OF FREDERICK COUNTY

1973

SE 021 640

Frederick County Board of Education

Mini Courses for

Life, Earth, and Physical Sciences

Grades 7, 8, and 9

Committee Members

Life Science	-	Terrence Best Paul Cook Sharon Sheffield Melvin Whitfield
Earth Science	-	Nelson Ford John Fradiska John Geist
Physical Science	-	Ross Foltz Kenneth Howard Fred Meyers

Dr. Alfred Thackston, Jr.
Assistant Superintendent for Instruction

Marvin Spencer
Science Supervisor

Frederick, Maryland

1973

Frederick County Board of Education
Frederick, Maryland

Mr. G. Hunter Bowers, Jr.
President

Mr. Frederick L. Smith, Vice President
Mrs. Frances W. Ashbury
Mr. William B. Barnes
Mr. Clement E. Gardiner
Mrs. Mary Condon Hodgson
Mrs. Doty Remsberg

Dr. John L. Carnochan, Jr.
Superintendent of Schools

Copyright 1973

Frederick County Board of Education

FOREWORD

The contents represented in these modules of instruction, called mini courses, is an indication of our sincere desire to provide a more individualized and flexible approach to the teaching of science.

Data was accumulated during the school year relative to topics in life, earth, and physical science that were felt to be of greatest benefit to students. The final selection of topics for the development of these courses during the workshop was made from this information.

It is my hope that these short courses will be a vital aid in providing a more interesting and relevant science program for all middle and junior high school students.

Dr. Alfred Thackston, Jr.
Assistant Superintendent for Instruction

ACKNOWLEDGEMENTS

Mrs. Judy Fogle, Typist
Miss Patti Lockard, Typist
Mr. Victor Gosnell, Printing Assistant
Mrs. Helen Shaffer, Printing Technician
Mr. Darl Hinkle and Staff, Instructional Materials Center

A STUDY FOR THE BIRDS

Prepared by

Terrence Best

CONTENTS

Student Section (white pages)

Introduction

Objectives

Activities

Evaluation

Conclusion

Teacher Section (blue pages)

Evaluation

Resources

Estimated Teaching Time

2-4 weeks

A STUDY FOR THE BIRDS

INTRODUCTION:

The study of birds is not just for little old ladies. Many scientists spend their lives studying birds. What they have learned about birds, applies to many different kinds of animals, including man.

Birds are studied frequently, because they are always out and around in the daytime, and they are easy to see. Birds live in every part of the world and many have some very strange adaptations (features) about their bodies.

For most people, birds are a very interesting hobby. It is fun to watch them and be able to identify different ones. It is interesting to watch for different kinds to show up in the fall and spring as they pass through your area during migrations.

All in all, they are very useful animals and they are of great benefit to man. Song birds and insect eating birds should never be killed deliberately. It would be wise for all people to know about birds and to help protect them.

OBJECTIVES:

The student can:

1. describe 8 ways in which birds are different from man.
2. name the major parts or regions of a bird's body including beak, crown, cheek, nape, chin, throat, ear patch, back, rump, tail, breast, belly and flank.
3. distinguish the terms nestling, fledgling, immature, adult.
4. describe the time and need for molting.
5. list some materials and places where birds build nests.
6. distinguish feeding habits of birds, from pictures of the beaks of birds.
7. identify the terms nocturnal, diurnal, resident, summer resident, winter resident, range and habitat.
8. list and describe the habitat of 20 birds which are some kind of resident of the local area.
9. use a field guide to identify birds.
10. choose one or more of the activities which are projects and complete this for grade.
11. identify John James Audubon and describe why he is famous.

ACTIVITIES:

1. Read the following information about birds.

   Birds are one of the major kinds of animals with backbones. They probably came from reptiles millions of years ago. The first bird to exist which we know about today, we call Archeopteryx. This bird was quite different from our birds of today. It had teeth, a lizard-like tail, with feathers on it, and claws on its wings to help it climb and hold onto things.

   Birds of today are like humans in many ways but they are also quite different. For example:
   a. they do not have teeth. Instead they have tough beaks of many different shapes to help them gather food.
   b. they have feathers over most of their bodies. Biologists think that feathers are something like scales which have "popped".

c. they have scales on their legs and feet. Biologists think that these scales help to prove they are close relatives of reptiles.
d. their forelimbs (front legs) are adapted for flying.
e. their hindlimbs (back legs) are very different in the various kinds of birds. These legs are adapted to life in different environments like water, perching on limbs, or holding onto the sides of trees.
f. birds lay eggs which have a hard shell around them. Most birds also build nests.
g. the long bones of the wings, legs, and body of birds are hollow and filled with air. This helps the bird have less weight so it can fly more easily.
h. most birds have air sacs inside their body. These air sacs also help to make their bodies lighter.

To the ornithologist (biologist who studies birds) birds are mainly identified by looking for special characteristics of their body. These characteristics include their color, the shape of their body, beak, and feet, and their behavior. Birds are also identified by their nests, song, and habitat. However, it is most important to understand the outside body parts of a bird to properly identify it. Color markings on the throat, crown, nape of neck, shoulder, cheek and flank are the most often used terms which a beginner might not understand.

Young birds and their care

When birds first hatch they are called nestlings. Later when they begin flapping their wings and trying to fly, they are called fledglings. Then, after they have left the nest and are flying, but they are not old enough to breed, they are called immatures. Sometimes immatures look like adults as in ducks and quail, but sometimes their color patterns are really different like in eagles.

When nestlings first hatch, they may be able to walk and feed themselves or they may be completely helpless. Birds like chickens, ducks, quail and pheasants are called precocial. The chicks are hatched with down feathers, they can walk and they can feed themselves. The parents spend most of their time protecting and directing the young. However, most birds are hatched without many feathers, helpless, and unable to walk or feed themselves. Such nestlings are called altricial and require constant care from their parents.

As the young grow older, they lose their down feathers and gain adult wings, tail, and body feathers. This is called MOLT. All birds undergo feather molt at least once a year. The main molt for adult birds is toward the end of the summer. At this time, they get a new complete set of feathers. This is necessary because the old feathers become very worn and short. Some birds, like woodpeckers and ducks, which have brightly colored feathers, undergo molt of just these bright feathers in the spring. This is done to make sure the feathers are bright and colorful before the breeding season begins.

When the fledglings are strong and ready, they will leave the nest. At this time, the parents will follow them and continue to feed them until their wing muscles are strong enough to fly like adults. Then the immatures are on their own and the parents may try to raise more young that same year. Some birds, like quail, have been known to raise 5 clutches (sets of eggs) a season.

Nests

Almost every kind of bird builds a nest to lay eggs and raise young, but not to live in as a home. Nests are built just about any place, depending on the kind of bird and the habitat in which it lives. Tree dwelling birds, like robins, will build their nest in the branches of a tree. Ground dwelling birds, like kildeer and pheasants, build their nests in clumps of grass. Birds, like woodpeckers, owls, and wood ducks, will build their nests in hollow trees. Swallows and swifts will build their nests of mud in garages, barns, chimneys or rock cliffs. Kingfishers build their nests in holes along river banks.

The nests of different kinds of birds are also different in the shape of the nest and the material used to build the nest. Some of the kinds of materials used are mud, gravel, feathers, grass, sticks, wood chips and paper.

Feeding habits

Most birds are either seed and fruit eaters or insect eaters. They are very important members of natural communities. The shape of the beak will most often tell you what the bird eats. If the beak is short and thick like a sparrow or a cardinal, then the bird cracks hard seeds to eat. If it is long, blunt and heavy, it chisels wood like woodpeckers and sapsuckers. Woodpeckers eat the insects which live in the bark of a tree and sapsuckers drink the sap from a tree. Ducks have flat bills with filters in it for straining water to eat algae and small plants. Hawks, eagles and owls have heavy sharp, curved bills for tearing flesh from animals. Some birds, like kingfishers and herons, have long, thin, sharp beaks for spearing fish.

Most birds feed during the day, so they are said to be diurnal. A few, like nighthawks, whip-poor-wills, and owls feed at night and they are called nocturnal.

Migration

Biologists have been trying for some time to find out how and why some birds migrate. Several answers have been offered and these answers are complicated to explain. However, evidence shows that migrating birds use the position of the sun during the day and the position of the stars at night to navigate. The main reason why most birds migrate is to move to a place where more food is available.

Birds like quail, grouse, pheasants and most woodpeckers live in this area year round and are called residents or permanent residents. Birds like ducks stop off here in winter as they come from the north, and are called winter residents. Birds like swallows, robins and wrens, live here in the summer but fly south in the winter and are called summer residents.

When birds migrate, they go about it in 3 different ways. Some birds begin flying and go continuously until they arrive at the wintering grounds. Other birds like mallard ducks will fly south until they find good weather. Then they remain there until a cold snap comes and drives them further south. Finally, birds like warblers and robins just begin moving and feeding southward. They fly a few miles each day until they reach their wintering areas.

Range and habitat

Birds live almost everywhere on earth. They are adapted for cold climates and warm climates. They live on the ground, in trees, on the water, and in holes in the ground. Most can fly but some cannot. The range is the part of the world that a particular kind of bird can live. The habitat is the kind of plants and place within the range where the bird lives. For example, the range of the roadrunner is the Southwestern part of the United States and Mexico. However, its habitat is desert and you would not find it in the mountains and forest of this range.

Extinct and endangered species

Birds have been harmed by man's activities for many years. Many birds are now extinct and many, many more are now in danger of extinction. The destruction of their habitat for roads, buildings and farming have hurt some species. The insect eaters and flesh eaters numbers have been reduced by man's use of insecticides. Birds with pretty and colorful feathers were once hunted for their feathers. Many birds were hunted heavily for food. Because of all this, the U.S. government and states now protect most birds.

2. In order to go bird watching, you will need to know the names of the outside parts of a bird's body. Study these parts from these popular field guides.
   - R.T. Peterson, A Field Guide to the Birds, New York, Houghton Mifflin Company
   - Chandler S. Robbins, Bertel Bruun and Herbert S. Zim, Birds of North America: A Guide to Field Identification, New York, Golden Press

3. Study the beaks and feet of certain kinds of birds. Sketch these structures and list the purpose of each structure. You can find such pictures in most textbooks or
   - Brandwein,Beck, Strahler, Brennan, Turner, The Earth: Its Living Things, Harcourt, Brace Jovanovich
   - Milliken Full Color Transparency Book, Birds, St. Louis, Milliken Publishing Company
   - Filmstrips: Food Habits of Land Birds, Food Habits of Water Birds

4. Find a field guide on birds. There are many different kinds in your school library. Look up the following information and write it down. Find the size, distinguishing color markings, and range of the following birds - cardinal, robin, great horned owl, bald eagle, red winged blackbird, kingfisher, meadowlark, killdeer, house sparrow, ivory billed woodpecker. The names of some field guides are:
   - R.T. Peterson, A Field Guide to the Birds, New York, Houghton Mifflin Co.
   - Chandler S. Robbins, Bertel Bruun, and Herbert S. Zim, Birds of North America: A Guide to Field Identification, New York, Golden Press
   - Elizabeth T. Caulk, Some Common Birds of Maryland, Annapolis, Maryland, Maryland Department of Game and Inland Fish

5. Go on a walk and look for birds. If you can take along a pair of binoculars and a field guide, do so. Make a list of the birds you see and where you see them.

6. Study one kind of bird that lives in your area. Read about its range and habitat. After you know these things, go looking for the bird until you see it.

7. Prepare a list of birds found in your area. List their habitat and whether they are permanent, summer or winter residents. If you need help
   - use any of the field guides listed in Activity #4.
   - view the Audubon's Birds of America filmstrip series

8. Look at some pictures of birds. Prepare a list which shows the bird's name and the kind of food it might eat by looking at its beak.
   - Use any of the field guides listed in Activity #4
   - View the following filmstrips
     a) Audubon's Birds of America (series of 6)
     b) Classification of Living Birds (series of 5)
     c) Food Habits of Land Birds I.F.C.
     d) Food Habits of Water Birds I.F.C.
   - Study transparencies Birds, Milliken Publishing Company

9. Make a list of the kinds of game birds (birds hunted with guns) in your area. List their habitat and food if possible. For help use
   - any of the field guides listed in Activity #4
   - Filmstrip: Birds of Prey and Game, Marsh, and Shore Birds, Encyclopedia Britannica

10. Write a report about John James Audubon. Tell about who he was, what he did, and when he lived. What is he most famous for? For reference use any encyclopedia in the library or view the filmstrip
    - John James Audubon, Encyclopedia Britannica

Projects

11. Begin a life list. A life list is prepared by taking a spiral notebook and making a column for name, a column for date, and a column for notes. Then every time you see a new bird for the first time, you write it on your life list. See how long it takes you to get 25 birds.

12. Listen to bird songs. See how many birds you can identify by their song.

13. Go on a walk to look for birds. When you find one, try squeaking or make sharp whistles with your hand pressed against your mouth. Write down how the bird reacts to this. Keep experimenting. The sound you make by doing this resembles the distress call of most birds. You should get some kind of reaction from the bird by doing this.

14. Try imitating some bird songs. See if you can attract birds into the open by imitating their song.

15. Try finding some birds nests. Since a lot of birds hide their nests, this can become like playing detective. When you find one, take a picture of it or record the following information if possible. Kind of bird, date, place where found, kind of tree or bush it is in, kind of material it is made of, number of eggs or babies, or is it abandoned?

16. Build a blind or find a place to hide. Put out some kind of food. Record the kinds and the numbers of each bird which comes to eat. Put out a different kind of food and record the same information. Do this as often as you wish. Some kinds of foods to try are store bought bird seed, bread, crackers, fat or senew, nuts, fruit or berries, nectar.

17. Build a bird house. Find a suitable place and put it out. Watch the house and record the birds which live there. Check some books for plans or see
    - William Hillcourt, The New Field Book of Nature Activities and Hobbies, G.P. Putnam's Sons, New York

18. Build a bird feeder. Use it year round and record the kinds of birds which you see at the feeder. Check some books for plans or see the book mentioned in #17.

19. If you have a camera, try photographing some birds. This usually requires a telephoto lens because birds will not let you get real close to them. However, you can easily photograph nests and babies, or you can photograph the habitat where you have seen birds. Arrange your photographs in a book or a display.

20. Make a collection of abandoned bird nests. Identify the nests and spray them to kill any insects which might be in the nest.

21. Make a collection of the different kinds of feathers found on a bird. This means wing feathers, body feathers, down feathers, tail feathers. Feathers can be found in late summer during the molting season. Mount the feathers on a piece of cardboard with a piece of tape or cement. Several kinds of arrangements are possible. For example, kinds of feathers, feathers of different birds, different sizes of feathers, or different colors of feathers. See the filmstrip: Some Functions of Feathers, I.F.C.

22. While you are watching different kinds of birds, see if you can find their tracks in mud, snow or sand. Sketch the tracks with the names of the birds.

23. Using pieces of wood or clay, carve or mold the shape of a bird's egg. Check the library to find the measurements and color photos of different kinds of bird eggs. Paint the models exactly like birds eggs and arrange them in a collection.

EVALUATION

When you have finished the activities, as directed by your teacher, then report back for your evaluation exercise. Good luck and don't let the birds get the best of you.

CONCLUSION

Did you learn the objectives at the beginning of this course? If you did, great. You are for the birds.

Evaluation

The activities at the end of this packet are designed to afford various ways to complete the behavioral objectives. Projects are also provided for the student who wishes to begin bird watching. It is recommended that you select certain activities to achieve the objectives. However, you may wish to relate to the students which activities can be used for each objective and allow them to make their own selections.

Resources

Field Guides

*- R.T. Peterson, A Field Guide to the Birds, New York, Houghton Mifflin Co.
*- Chandler S. Robbins, Bertel Bruun, and Herbert S. Zim, Birds of North America: A Guide to Field Identification, New York, Golden Press
*- Elizabeth T. Cavik, Some Common Birds of Maryland, Annapolis, Maryland, Maryland Department of Game and Inland Fish
*- William Hillcourt, The New Field Book of Nature Activities and Hobbies, New York, G.P. Putnam's Sons
- Leon A. Hausman, Field Book of Eastern Birds, New York, G.P. Putnam's Sons
- Robert E. Steward and Chandler S. Robbins, Birds of Maryland and the District of Columbia, North American Fauna Series N.62, Washington, D.C., U.S. Department of the Interior, U.S. Printing Office
- G.H. Pough, Audubon Land Bird Guide. Audubon Water Bird Guide, New York, Doubleday & Co.

Other large colorful books on birds

- J. Fisher and Roger T. Peterson, World of Birds, New York, Doubleday & Co.
- R.T. Peterson, The Birds, Chicago, Time-Life Books

Filmstrips

- Observing Birds in Nature - Encyclopedia Britannica
- Discovering Birds - Encyclopedia Britannica
- Encyclopedia Britannica Series: Audubon's Birds of America
  - *a. John James Audubon
  - *b. Birds of Forest and Woodland
  - *c. Birds of Sea and Shore
  - *d. Birds of the Countryside
  - *e. Birds of the Garden
  - *f. Birds of Villages and Towns
- Encyclopedia Britannica Series: Classification of Living Birds
  - *a. Birds of Prey: and Game, Marsh, and Shore Birds
  - *b. Flightless Birds and Primative Water Birds
  - *c. Some Birds of Field and Forest
  - *d. Some Representative New World Songbirds
  - *e. Some Representative Perching Birds
- I.F.C. Series: Learning About North American Birds
  - *a. Food Habits of Land Birds
  - *b. Food Habits of Water Birds
  - c. Nesting and Feeding the Young
  - *d. Some Functions of Feathers

8 mm Loops

(Super) Introducing Birds, Coronet

Models
Vertebrates (Birds), Westad, Inc., General Zoology, Chart Two

Transparencies
*Birds, Milliken Publishing Company

*Referred to in Student Activities.

Evaluation Form for Teachers

1. Name of the mini course _____

2. Was this unit appropriate to the level of your students?

3. Explain how this mini course was used with your students. (Individual, small group, or total class)

4. Identify the plus factors for this course.

5. List the changes that you would recommend for improvement.

7. Did you use any other valuable resources in teaching this unit? If so, please list.

PLEASE RETURN TO SCIENCE SUPERVISOR'S OFFICE AS SOON AS YOU COMPLETE THE COURSE.

ADDITIONAL SCIENCE MINI-COURSES

LIFE SCIENCE	Prepared by
A Study for the Birds	Terrence Best
Creepy Critters (Snakes)	Terrence Best
How's Your Plumbing?	Paul Cook
Guess Who's Been Here for Dinner	Paul Cook
Plants - The "Other" Living Things	Sharon Sheffield
Let's Look at You - The Human Organism	Sharon Sheffield
Classification: Why is There a Need?	Melvin Whitfield
Protist: The "Unseen" Kingdom	Melvin Whitfield

EARTH SCIENCE	
Coastline Development	Nelson Ford
Ocean Currents	John Fradiska
Features of the Ocean Floor (Ocean Floor Topography)	John Fradiska
Space and Its Problems	John Geist
Invertebrate Fossils: Clues to the Distant Past	John Geist
An Attempt towards Independent Study in Astronomy	John Geist

PHYSICAL SCIENCE	
Household Chemistry	Ross Foltz
Notions on Motions	Kenneth Howard
Environmental Chemistry	Fred Meyers